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SUMMARIZED MINUTES

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SIXTEENTH VALLEY-STATES COORDINATING COMMITTEE CONFERENCE

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U.S. Department of Agriculture

Negley Hotel, Florence, Alabama

Tuesday and Wednesday, March 4 and 5, 1941

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Tuesday and Wednesday, March 4 and 5, 1941

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Pursuant to call by the Coordinating Committee, the sixteenth regular semiannual conference of the Valley-States deans and directors, officials of the Tennessee Valley Authority, and representatives of the U. S. Department of Agriculture, was held at the Negley Hotel, Florence, Ala., on Tuesday and Wednesday, March 4 and 5, 1941.

On invitation from the conference, transmitted through Mr. Eisenhower, Department member of the Coordinating Committee, three representatives of the AAA were present to take part in the discussion of Administrative Relations with the Agricultural Adjustment Administration. They were Administrator R. M. Evans; W. A. Minor, Assistant to the Administrator; and Mr. F. W. Darner, Chairman of the AAA Committee on Conservation Materials and Services.

A list showing dates and places of the fifteen previous conferences is attached as appendix A (p. 21).

The conference was called to order at 9 a.m. on Tuesday, March 4, by the Executive Secretary, in the absence of Chairman Cooper, who was delayed in arriving. On motion, Director C. E. Brehm of Tennessee was elected temporary chairman.

O. PERSONNEL OF THE CONFERENCE

All of the seven Valley States, the Tennessee Valley Authority, and the U. S. Department of Agriculture were represented. Director C. A. Mooers, of the Tennessee Agricultural Experiment Station, and Dr. H. A. Morgan, Chairman of the TVA Board of Directors, were prevented from attending because of personal illness. Director J. R. Hutcheson, of the Virginia Extension Service, was detained because of family illness.

Deans and/or directors of Extension in Arkansas, Florida, Louisiana, and South Carolina were invited to attend the conference. Arkansas and Louisiana were represented. Florida was unable to send representatives but sent some suggestions in writing. South Carolina made no reply.

The list of those representing the various cooperating agencies is as follows:

Alabama:	Dean M. J. Funchess, Director of Experiment Station, Auburn. Director P. O. Davis, Extension Service, Auburn. Mr. R. M. Reaves, Assistant in County Agent Work, Athens. Dr. J. W. Tidmore, Assistant Director, Experiment Sta- tion, Auburn. Mr. A. W. Jones, State Administrator of AAA, Auburn.
Arkansas:	Dean and Director W. R. Horlacher, Fayetteville.
Georgia:	Director H. P. Stuckey, Experiment Station, Experiment. Director Walter S. Brown, Extension Service, Athens.
Kentucky:	Dean and Director Thomas P. Cooper, Lexington. Mr. George Roberts, Assistant Dean, Lexington.
Louisiana:	Mr. H. C. Sanders, Acting Director, Extension Service, University.
Mississippi:	Director Clarence Dorman, Experiment Station, State College. Director E. H. White, Extension Service, State College. Mr. S. P. Dent, Supervisor Demonstration Farms, State College.
North Carolina:	Dean and Director I. O. Schaub, College of Agriculture, Raleigh. Director Robert M. Salter, Experiment Station, Raleigh. Dr. L. D. Baver, Head, Department of Agronomy, Raleigh. Mr. R. W. Shoffner, Farm Management Supervisor, Raleigh.
Tennessee:	Director C. E. Brehm, Extension Service, Knoxville. Dean M. Jacob, College of Agriculture, Knoxville. Mr. J. H. McLeod, Assistant Director, Extension Service, Knoxville. Dr. W. H. MacIntire, Department of Chemistry, Knoxville. Mr. H. E. Hendricks, Extension Agromomist, Knoxville.
Virginia:	Director A. W. Drinkard, Jr., Experiment Station, Blacksburg. Mr. C. A. Montgomery, Assistant Director, Extension Service, Blacksburg.
Tennessee Valley Authority, Knoxville:	Director J. C. McAmis, Department of Agricultural Relations. Mr. Neil Bass, Chief Conservation Engineer. Dr. Harry L. Brown, Assistant Director, Department of Agriculture Relations. Miss Frances L. Ingram, Secretary to Director McAmis.
Department of Chemical Engineering, TVA, Wilson Dam:	Dr. Arthur M. Miller, Director. Dr. Raymond L. Copson. Dr. A. Stuart Campbell.

U. S. Department of Agriculture:

Mr. M. S. Eisenhower, Department Member of Coordinating Committee.
Mr. R. M. Evans, Administrator, AAA.
Mr. F. M. Darner, Chairman, Conservation Materials and Services Committee, AAA.
Mr. W. A. Minor, Assistant to the Administrator, AAA.
Dr. James T. Jardine, Director of Research and Chief, OES.
Mr. J. L. Boatman, Chief, Division of Subject Matter, Extension Service.
Mr. T. W. Taylor, Assistant to the Director, Extension Service.
Mr. Charles A. Sheffield, Division of Field Coordination, Extension Service.
Dr. Carleton R. Ball, Executive Secretary, Coordinating Committee.

1. ADMINISTRATIVE RELATIONSHIPS WITH THE
AGRICULTURAL ADJUSTMENT ADMINISTRATION

On invitation from the conference, transmitted through Mr. Eisenhower, Department member of the Coordinating Committee, three representatives of the AAA were present to take part in the discussion. They were Mr. R. M. Evans, Administrator; Mr. W. A. Minor, Assistant to the Administrator; and Mr. F. W. Darner, Chairman of the AAA Committee on Conservation Materials and Services.

Chairman Brehm introduced the subject and asked Administrator Evans to open the discussion. In the 3-hour discussion which followed, all three representatives of the AAA and practically all of the members of the Valley-States Conference took part.

The following arrangement is presented in an attempt to summarize the discussion by topics covered, without regard to the speakers involved or the sequence in which the topics were discussed. Below is given a list of the topics included:

- A. Objectives and Scope Similar in Conservation Programs.
- B. Attitude of Fertilizer Trade Toward Concentrated Phosphates.
- C. Geographic Sources of Phosphate Rock.
- D. Will Use of Concentrated Phosphate Cause Waste of Low-Grade Rock?
- E. Relation of Concentrated and 16-20 percent Phosphates.
- F. Can TVA Supply More Triple Superphosphate?
- G. Relative Production and Freight Costs on Different Phosphates.
- H. Cotton Sacks in Place of Paper or Jute Sacks.
- I. Can Phosphate Needs of States Be Ascertained Earlier?
- J. Seed Supplies of Conservation Crops.

For completeness of presentation, there is attached, as appendix B, a fuller statement entitled, Statement with Respect to Some Problems in Connection with the Agricultural Adjustment Administration Phosphate Program, prepared by Mr. F. W. Darner, Chairman, Conservation Materials and Services Committee, which formed the basis of remarks and discussions by Departmental representatives. It presents the material under the following heads:

- (0) Summary.
- (1) TVA and AAA Objectives Somewhat Different.
- (2) Development of Program.
- (3) What is the Best Form of Phosphate Agronomically?
- (4) What is the Cheapest Form of Phosphate?
- (5) Is Additional Phosphate Plant Capacity Needed and, if so, Where?
- (6) Should the AAA Encourage the TVA to Increase its Triple-Superphosphate Capacity?
- (7) Should the AAA Actively Encourage Private Manufacturers to Increase Their Triple-Superphosphate Capacity?
- (8) Should Any Needed Additional Plant Capacity Be Provided Now, or After the Present Emergency Is Over?

A. Objectives and Scope Similar in Conservation Programs

The speakers from both groups, AAA and Valley-States, stressed the fact that the two conservation programs sponsored by the AAA and TVA in cooperation with State agencies actually have many objectives in common. They, therefore, are complementary rather than competitive. From the standpoint of the cooperating States, both these programs have helped extension agencies to do what they previously had been trying to do by themselves. Phosphate and lime are the foundations of both programs and are coupled with requirements for other good farm management practices. In terracing farm lands, the trend has been away from large power outfits costing \$5,000 to small farm equipment costing about \$5.00.

The AAA program has helped to reduce the cost of phosphates. Larger production on fewer acres is a gain to farmers in better land use and lower costs of operation. All conservation programs tend to reduce costs and to increase soil fertility and productivity. One result in Tennessee is that red clover is coming back as a farm crop. The general opinion is that the test-demonstration program has been completely sold to farmers, but that not all farmers are able to undertake desirable practices. One of the best features in the AAA program, as in extension activities, is the democratic procedure in which increasing responsibility is assumed by the farmers themselves.

The AAA now uses the term "conservation materials and services" instead of the term "grants-of-aid" in order to avoid some criticisms which had arisen. One problem always before governmental agencies is to determine the limits to which they properly may go in such programs. The AAA has supplied phosphate, lime, and the seeds of some conserving crops

such as Austrian winter peas, hairy vetch, and kudzu. The demand for these materials will increase and, if other materials are added, a decision must be made as to whether such grants are infringing on legitimate private trade. The AAA recently has obtained from Congress the authority to borrow \$50,000,000 for use in handling this program. The Bureau of the Budget and the Appropriation Committees of Congress frequently raise these questions as to the proper scope of such activities, and how much the Government should spend for fertilizer research and education.

B. Attitude of Fertilizer Trade Toward Concentrated Phosphates

Some of the discussion indicated a belief that the trade was opposed to the idea of concentrated fertilizers and, therefore, was not desirous of supplying large quantities to AAA or to farmers. It was pointed out, however, that this was not necessarily true. Concentrated superphosphate for many years has been manufactured and sold for direct application by the Anaconda Sales Company in most of the Western States. Efforts to promote sales for direct application in Eastern States had been largely unsuccessful, with the result that practically all triple superphosphate manufactured in the eastern area prior to the inauguration of the AAA program had been used in mixed fertilizers. It was further pointed out that up until 1938 manufacturers of concentrated superphosphate had never operated at more than 50 percent of their annual production capacity. It was pointed out also that as the AAA phosphate program progressed manufacturers of concentrates were operating their plants at full capacity, which has been increased to over 300,000 tons annually. Two additional plants are coming into production which will provide at least an additional 50,000 tons. The AAA is not in a position to assure manufacturers of an increasingly larger demand for triple superphosphate by the AAA because of a number of important questions involved, which questions are discussed in detail in the aforementioned statement by Mr. Darner. (See appendix B.)

In Tennessee, a conference was held with representatives of the fertilizer industry. They were greatly interested in the conservation program and not at all critical of the procedures followed. Part of our program must be to inform them of the program and to show them that they are being helped by it.

It was pointed out that the trade cannot afford to expend large sums in increasing plant capacity for making triple superphosphate unless assured of a future demand. They sense a possibility that the present agencies promoting conservation programs may not be permanent. On the other hand, it is pointed out that these programs already have created a permanent farmer-demand for concentrated phosphates, and that this demand is increasing year by year through the spreading of information from test-demonstration farms to the surrounding communities. One incidental but important achievement of the AAA Program has been to utilize surplus superphosphate production capacity, enabling plants to operate over longer periods each year, which in turn has resulted in some

reduction in the price to the AAA of the superphosphate it has purchased, and, it is believed, in some reduction in the price of commercial fertilizers.

C. Geographic Sources of Phosphate Rock

It has been pointed out many times by representatives of the Valley States and the TVA that the supplies of phosphate rock in Tennessee are very limited. Those in Florida are larger, but limited, whereas those in the Far West are relatively very abundant. With these facts in mind, it seems economically unsound to draw most heavily on the Tennessee deposits for the production of phosphate fertilizers to supply Northern and Northeastern States with the prospect that phosphates in Florida and the Far West will have to be brought into the Tennessee Valley when the local supplies are gone.

Members expressed the desire that the fertilizer trade use more Florida and Western rock in order to conserve the limited Tennessee deposits for more local use. It was stated that 85 percent of the phosphates purchased by AAA for the 1941 program will be made from Florida rock.

D. Will Use of Concentrated Phosphate Cause Waste of Low-Grade Rock?

It was pointed out that high-grade phosphate rock is required for economical production of concentrated phosphates, and the thought was expressed that this might result in the low-grade material being neglected, and this potential natural resource thereby wasted. In reply, however, it was shown that the same economy of production results from using high-grade rock in making 16-20 percent superphosphate as in making concentrated phosphate. Other things being equal, therefore, the low-grade rock always would be left until high-grade rock was exhausted.

Actually, low-grade material can be used in the manufacture of both low-analysis and high-analysis phosphates, and will be so utilized when comparative material costs, transportation costs, and manufacturing costs permit. By the electric-furnace method, low-grade material can be effectively used, and cheap electricity helps reduce total cost. By the flotation method, material low in phosphate content can be converted to high-grade material through the extraction of foreign particles. By this method material formerly discarded is now being converted to high-grade material and utilized in the manufacture of superphosphate. It was pointed out, further, that it makes considerable difference whether low grade is caused by silica or by iron and aluminum. Silica can be removed easily, but iron and aluminum only with more difficulty.

E. Relation of Concentrated and 16-20 percent Phosphates

The TVA-State conservation program on test-demonstration farms promotes the use of concentrated phosphates in order to effect savings in the cost of bags, handling, tax tags, and freight charges to the farmer. TVA has supplied only concentrated phosphates. For a number

of reasons the AAA originally furnished only concentrated materials, but, after experiments in the procurement and distribution of the 20-percent grades, is now purchasing and distributing large quantities of regular superphosphate in addition to the triple superphosphate it can obtain. What are the facts regarding the relative efficiency of each per unit of phosphorus, the comparative cost per unit of phosphorus, and the comparative freight charges per ton and per unit of phosphorus in different geographic areas?

Many results on comparative efficiency per unit of phosphorus in high-analysis and low-analysis phosphate fertilizers have been obtained and assembled.* Per unit of phosphorus, the differences probably are not significant on most soils and with most crops. In Mississippi the AAA requirement is that phosphorus must be used if any benefit payments are to be obtained. It was pointed out that farmers have been sold for many years on the efficiency and desirability of low-analysis fertilizers, whereas concentrates are relatively new and unknown. Furthermore, not all farmers have the equipment or experience to distribute concentrated fertilizers accurately or satisfactorily. There seems to be definite need for a small machine to distribute concentrated phosphates accurately. Finally, there is the other question of whether newer materials, such as fused phosphate, metaphosphate, or potassium metaphosphate, may not eventually supplant the triple superphosphate.

The question was raised as to whether plants constructed to manufacture triple superphosphate could be converted, without excessive cost, to the manufacture of the more concentrated phosphates. It would be relatively inexpensive to convert plants producing elemental phosphorus to the production of metaphosphates. While it is believed that triple superphosphate manufactured from the wet-process method could be converted to calcium metaphosphate, the processes for making this conversion have not been developed on a commercial scale.

F. Can TVA Supply More Triple Superphosphate?

TVA is obliged to provide concentrated phosphates for the expanding test-demonstration programs. Its plant capacity is not expanding and it can sell to AAA only the surplus above its own needs for test demonstrations. On this basis, it cannot expect to provide AAA with any considerably larger quantities than heretofore. It was stated that farmers are sold on concentrated phosphates and are disappointed when they

*(Various authors). Results of Cooperative Tests of Tennessee-Valley-Authority Plant-Food Materials by the Valley-States Land-Grant Colleges. Part 1: Agricultural Experiment Station Results. Mimeographed, 78 pages. November, 1940. (Prepared under the auspices of the Coordinating Committee of the Valley-States Land-Grant Colleges, the United States Department of Agriculture, and the Tennessee Valley Authority.)

must take low-analysis goods. Representatives of some of the States present, however, indicated that, because of the type of soil and other considerations, farmers in their States generally prefer the 20-percent material if the cost to them per unit is not too greatly different from that of triple superphosphate.

G. Relative Production and Freight Costs on Different Phosphates

Early in 1938, after experience in 1937, the AAA purchased commercial phosphate after making contacts with all manufacturers. Because of procurement difficulties involved, it bought on indefinite contracts. Later, it made definite contracts for all surplus concentrated phosphate on the market, but for no 20-percent phosphate. In 1939, it bought 20-percent phosphate for use in Vermont and Pennsylvania. In 1940, it purchased still larger quantities. For 1941, it has definite contracts or agreements for 200,000 tons of triple superphosphate and indefinite contracts under which it probably will purchase at least 400,000 tons of 20-percent phosphate. Heretofore, the highest production of 20-percent phosphate has been about 4,000,000 tons annually, while the maximum productive capacity is over 8,000,000 tons. However, because of the necessity of using indefinite contracts, it is difficult for the trade to know just how much 20-percent material to produce. For 1942, it should be possible to make definite contracts for desired quantities of 20-percent phosphate and to make definite allotments to the States.

For certain areas, the 20-percent goods cost less, per unit of phosphorus, than the concentrated phosphates. This is true for New England and Pennsylvania and for all territory east of the Mississippi River and south of the Ohio River, except Kentucky and Mississippi, where the relative current costs are not greatly different. All the old land-grant freight rates, except one, have been eliminated.

For triple superphosphate the prices quoted by two manufacturers are lower than those of the TVA. The capacity of commercial plants was 200,000 tons annually at first. It is now 300,000 tons annually. Two more plants are soon to be producing, thus increasing the capacity to 350,000 tons.

H. Cotton Sacks in Place of Paper or Jute Sacks

A large percentage of AAA phosphate is procured in cotton bags. It is costing AAA approximately \$100,000 more to supply these cotton sacks as compared with paper sacks. Jute bags also were inexpensive formerly but war conditions have changed that. It is stated, however, that farmers prefer cotton bags because of the various domestic uses to which they can be put after the fertilizer is removed. The present practice of printing both sides of the cotton sacks has affected this preference somewhat. Concentrated fertilizers also require fewer bags per unit of plant food, and the farmer, therefore, gets fewer bags.

I. Can Phosphate Needs of States be Ascertained Earlier?

In order to make definite-quantity contracts covering the purchases of 20-percent superphosphate for 1942, the AAA will require

fairly accurate estimates, by States and counties, before it can advertise for bids. If such estimates cannot be obtained, the AAA contracts will have to be for indefinite quantities, which leaves the contractor in the dark as to how much material to prepare for the AAA. However, the AAA plans to ask its State AAA offices for estimates to be submitted early in May, and will appreciate the cooperation of the extension services and other interested agencies in making these estimates as accurate as possible.

The question as to whether AAA could obtain more concentrated phosphate from the trade, thus leaving TVA material for test-demonstration, was raised. In the past it has been difficult for farmers, AAA committees, and extension agents to know how much they could get and therefore they could not plan ahead for its use. It is absolutely necessary first to be sure of enough for the test-demonstration program.

The question was raised also as to whether TVA can make the most progress through sale of concentrated phosphates to AAA or through their use in the test-demonstration program.

MOVED by Director Davis that a committee be appointed to study the problems of phosphate supplies and of obtaining estimates of demand and to report their findings at the next Valley-States Conference. Seconded by Director Brown and CARRIED.

Chairman Cooper appointed Directors C. E. Brehm of Tennessee (chairman), J. R. Hutcheson of Virginia, and P. O. Davis of Alabama, as members of this committee.

J. Seed Supplies of Conservation Crops

Where to get a sufficient supply of seed of different conservation crops, especially legumes, was stated to be an important problem. This statement was followed by an extensive discussion of seed supply, seed quality, seed laws, etc. It was brought out also that a ceiling on seed prices is needed to prevent profiteering. AAA plans in reference to such seeds have not been changed. However, an amendment has been proposed to the AAA Act which would permit AAA to purchase seed through normal trade channels without adhering to all of the competitive-bidding restrictions required by present laws. This would enable AAA to meet the present seed problem more effectively than at present.

Kudzu is being used very extensively in the Gulf Coast States as a hay crop. The seed supply is exceedingly limited and of poor quality because this plant does not set seed readily in the United States. Because the annual requirement is much greater than the supply, it was felt desirable and also possible that the provisions of the Federal Seed Law might be waived or regulations modified in the case of kudzu seed.

Dr. Harry L. Brown, Assistant Director of the Department of Agricultural Relations, TVA, read a list of those States outside the Tennessee Valley area which are conducting unit-farm test demonstrations.

On motion, the conference adjourned for lunch to reassemble at 1:30 p.m. and proceed by car for an inspection tour of the TVA fertilizer plant at Muscle Shoals.

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2. INSPECTION TOUR OF TVA FERTILIZER PLANT

The afternoon of Tuesday, March 4, was spent in studying the raw materials, manufacturing processes, and finished products used in the operation of the TVA fertilizer plant. The products inspected were triple superphosphate, calcium metaphosphate, elemental phosphorus, fused phosphate, and calcium silicate slag. The curing and storage warehouse, the removal of cured phosphate from storage to grinders, and the operations of weighing and bagging, sewing of bags, and loading of freight cars with 100-lb. sacks of triple superphosphate also were studied. The tour was made under the direction of Dr. Arthur M. Miller, Head of the Department of Chemical Engineering, assisted by Dr. Raymond L. Copson, Dr. A. Stuart Campbell, and Mr. Charles H. Young. The representatives of the Agricultural Adjustment Administration and Mr. Eisenhower had visited the plant on the afternoon of Monday, March 3, because of the necessity of their return to Washington on Tuesday afternoon.

As a result of the visit to the fertilizer plant, there was prepared for distribution to the conference members the next day a set of four samples of plant products; namely, triple superphosphate, calcium metaphosphate, fused rock phosphate, and potassium metaphosphate.

EVENING SESSION, TUESDAY, MARCH 6

The special evening session was called to order at 7:30 p.m. by Chairman Cooper.

MOVED by Dean Horlacher that the Conference meet at 8:30 a.m. on Wednesday and that final adjournment be at 3 p.m. Seconded and CARRIED.

3. DATE AND PLACE OF NEXT MEETING

In view of the action taken at the Asheville conference on October 1, 1940 (minutes, p. 3), in voting to hold an annual conference thereafter, a considerable discussion on meetings developed. Among the points made were the following:

- (a) That important problems are arising continually and that meetings are needed at least semiannually, whether by vote or on call by the Coordinating Committee.

(b) That in the past not many topics requiring semiannual meetings have arisen and that an annual meeting using 2 full days seems sufficient.

(c) That much time is lost in travel to conferences and therefore it is better to have them less frequently and stay longer at each.

(d) That closer and more frequent contacts (perhaps once in 4 months) are desirable in periods of emergency and that group thinking is helpful.

(e) That the need of regional meetings grows rather than decreases, the land-grant college meetings being national and not regional in scope.

(f) That our conferences are justified if they are for both TVA problems and all Valley-States problems, but not otherwise.

(g) That it is not possible to separate administrative and technical or subject-matter problems, as most problems have elements of both.

(h) That we should have one meeting for administrative problems and another for technical questions.

(i) That our program and objectives, if known, are diffuse and uncoordinated, each person present having a different idea as to what the test-demonstration farms are for and what to tell county agents to do in the program.

(j) That we must develop a common ground of procedures and policies in our program.

(k) That the group has joint responsibility for the cooperative program, which needs both conference and coordination.

(l) That coordination or dovetailing of the programs of all agencies is highly important in a cooperative regional program, and is now being accomplished by regional coordinating committees in the Northern Great Plains Area and the Southern Great Plains Area.

(m) That the Congress sometimes gets the idea that there is duplication of effort among the 48 States, and that they do not coordinate their programs. Joint thinking on problems is good, and as this is a cooperative regional program, this conference can help the Office of Experiment Stations to find the answer to any question raised by the Congress.

(n) That the phosphates in the test-demonstration program have been used to better agriculture and have profoundly affected these States as well as those outside the Valley area.

(o) That group meetings of specialists are very productive, and that different subject-matter groups might meet in sequence to prepare and recommend programs and procedures.

(p) That forestry is a part of the whole regional program, but has not been so included, and that a study of the relationships of all agencies concerned with forestry problems is needed.

MOVED by Director Davis that the action of the 15th Valley-States Conference in providing for an annual meeting be rescinded. Seconded and CARRIED.

MOVED by Dean Schaub that the conference meet semiannually, the autumn meeting for discussion of administrative questions and the spring meeting for discussion of technical or subject-matter questions. Seconded and CARRIED.

There followed a general discussion as to when annual reports of research results and test-demonstration results can be prepared, interpreted, and submitted for discussion and action. The consensus seemed to be that research results and recommendations of a given calendar year could be ready for the spring meeting of the following year, and test-demonstration results and recommendations for the same calendar year could be ready for the fall meeting of the following year.

MOVED by Director Davis that the autumn conference be held at the Piedmont Hotel, Atlanta, Ga., on the first Tuesday in October (October 7). Seconded and CARRIED.

The conference then adjourned to reconvene at 8:30 on Wednesday morning.

WEDNESDAY FORENOON, MARCH 5

The session was called to order at 8:30 a.m. by Chairman Cooper.

4. REPORT AND RECOMMENDATIONS OF THE AGRONOMIC COMMITTEE

Introduction by the Executive Secretary

When the Executive Secretary asked the members of the Valley-States Conference to suggest the topics they wished to discuss at the forthcoming meeting, they submitted some 25 topics, mostly agronomic. Many of the members also proposed that Station and Extension agronomists attend the meeting and take part in the discussions.

As there was but one day for general discussion, and it did not seem possible to discuss 25 questions in a single day, especially if both administrators and specialists took part, the Executive Secretary referred the problem to the Coordinating Committee. Their decision was that an Agronomic Committee be appointed to meet at Florence on Monday and Tuesday, March 3 and 4, to prepare a program for a meeting of a larger committee of agronomists at a date sufficiently later to permit evaluation of present results and recommendations of any changes or additions needed in the research or test-demonstration program.

The following agronomists were asked by telegraph to serve on the Committee and all accepted: Dr. J. W. Tidmore of Alabama (Chairman), Professor George Roberts of Kentucky, Dr. L. D. Bauer of North Carolina, and Dr. W. H. MacIntire of Tennessee.

The Committee met at Florence on Monday and Tuesday, March 3 and 4, and prepared a report containing a proposed program for a later meeting. This program was presented by Chairman Tidmore, as follows:

Proposed Program for Meeting of Valley-States Agronomists

1. The Relation of Liming to the Efficiency of Various Phosphatic Fertilizers.

W. H. MacIntire, Tennessee Station

2. The Efficiency of Various Forms of Phosphate in:

A. Crop Rotations

George Roberts, Kentucky Station

Discussion: W. W. Woodhouse, North Carolina Station

B. Cotton Production

J. T. Williamson, Alabama Station

Discussion: W. B. Andrews, Mississippi Station

C. Pasture Production

H. E. Hendricks, Tennessee Extension Service

Discussion: R. M. Reaves, Alabama Extension Service

3. The Influence of Phosphate and Lime Applications on the Chemical Composition of Pasture Plants.

E. N. Fergus, Kentucky Station

Discussion: T. B. Hutcheson, Virginia Station

4. The Influence of the Phosphorus Content of Forage Crops on Animal Nutrition.

Dr. Dorothy Williams, Tennessee Station

Discussion: Dean M. Jacob, Tennessee Station

5. How is Soil Survey Information being used in the Experimental and Demonstrational Programs?

S. S. Obenshain, Virginia Station

Discussion: J. W. Moon, Tennessee Valley Authority

6. The Effect of Test-Demonstration Farms on Soil Improvement and Conservation Practices.

E. D. Alexander, Georgia Extension Service

Discussion: J. H. McLeod, Tennessee Extension Service

7. Suggestions for Improving the Experimental Work:

- A. Testing the efficiency of a mixture of ortho and metaphosphate.
- B. Potash tests on test-demonstration farms.
- C. Potash and phosphate applications on perennial hay crops.
- D. Rates of P₂O₅ and rates of lime for pastures in relation to soil types.
- E. Should there be more pasture tests on soils of certain areas?
- F. Methods of applying phosphate and lime.
- G. Efficiency of various phosphates in crop rotations.
- H. Residual effects of the various phosphates.
- I. Supplements such as sulfur, calcium, and minor elements to high-analysis phosphates.
- J. The effect of organic matter on the efficiency of various phosphates.
- K. Fused rock phosphate work expanded.
- L. Pasture seeding practices in relation to phosphate and liming programs.

Discussion of the Committee Report

Following submission of the report, there was considerable discussion, part of which related to the report and part to the objectives of the cooperative program.

It was pointed out that the cooperative program is designed to aid farmers to improve their practices. It carries results from the Station to the farm, to the community. Its object is to develop a system of conservation farming for a better agriculture. The cooperative program has accelerated State programs and helped to finance them.

Specific problems needing answers were mentioned. Potash needs of soils on test-demonstration farms require determination. It was pointed out that soils vary in their need for potash and in their absorptive capacities. Kind and quantity of potash are important.

The chairman and other members of the Agronomic Committee pointed out that the report and accompanying recommendations were intended to answer some of the questions asked, and that the proposed meeting of agronomists should be able to go much farther in that direction. The committee had tried to arrive at regional viewpoints. The problems faced are not peculiar to the area, but the opportunity for coordinated effort is peculiar. It enables workers to follow nutrition of pasture crops, for example, from soil, to plant, to animal, to human beings.

Much more study of the program seems needed, as well as much more research on special phases. There are yet many questions relating to practices, and many difficulties in tying research results into the test-demonstration program. It is very desirable to determine how practices on test-demonstration farms limit the efficiency of phosphates.

MOVED by Dean Schaub that the time and place of the proposed future meeting of agronomists be left to the judgment of the Agronomic Committee. Seconded and CARRIED. The Committee later recommended that the meeting be held at Knoxville, Tenn., on Thursday and Friday, May 1-2, 1941.

MOVED by Dean Horlacher that a committee of three be appointed to define the objectives of the cooperative program. Seconded and LOST.

Director Davis suggested that each State hold a conference of its own specialists to arrive at institutional agreement on both objectives and procedures of the cooperative program before the next meeting.

5. PREPARING SUMMARIZED REPORTS OF TEST-DEMONSTRATION RESULTS

Because Mr. J. C. Lowery was unable to attend the conference, Director Davis designated Mr. R. M. Reaves, district supervisor for Northern Alabama, to lead this discussion. Mr. Reaves presented at some length the contents of the summarized report of test-demonstration results in Alabama from 1935 to 1940, inclusive, which had been submitted for publication in part 2 of the presentation of cooperative results.

In the 15 Valley counties of Alabama, 317 test-demonstration farms had been established to the end of June, 1940. In 30 counties outside the Valley there were 245 additional farm-unit test-demonstration farms. In the Valley counties there also were 24 area demonstrations containing 3,369 farms.

After briefly outlining the scope and objectives of the test-demonstration program, Mr. Reaves listed four major results to date, as set forth below:

1. The program has increased the effectiveness of extension teaching in two different ways:

a. It has facilitated widespread farm proving of applicable experiment station results, as farmers are much more easily influenced to action by what they see than by what they hear.

b. It has used the test-demonstration farms themselves as centers of teaching through inspection tours by other farmers, the number of farmers visiting 81 demonstration farms nearly doubling each year in the 3-year period, 1936-1938 (from 3,594 to 6,903 to 12,632.)

2. The test-demonstration program has developed farm leadership in two different ways:

a. It has induced local leaders to assume a much larger measure of responsibility for different activities, such as meetings, terracing, land-use programs, and conservation practices. For example, in Limestone County, local leaders in 1936 devoted 22 days to promoting the grass-legume program whereas in 1940 they devoted 121 days to it.

b. It has resulted in developing effective community organizations with wider community interests than those of the test-demonstration program alone.

3. The program has resulted in a definite and gratifying increase in the rate of adoption of recommended conservation practices by farmers. Among these practices are use of phosphates and lime, establishment of pastures, growing of lespedeza and winter legumes and the saving of seed, introduction of new crops and varieties, use of improved harvesting machinery, and land protection through terracing. Comparisons were made on the prevalence of certain practices in 13 Valley counties in 1935 and again in 1940; in two similar counties, one Valley and one non-Valley, in 1940; in 13 Valley counties compared with 54 non-Valley counties in 1938; and on one farm, in the surrounding community, and in the containing county in 1936 and 1940. No matter how arranged, the data served to show the effective influence of the test-demonstration program in better conservation practices.

4. The test-demonstration program contributes to better family living and farm income, in producing more feed for livestock and more food for the farm family, especially milk and milk products, poultry, eggs, and meat, as well as grain and vegetable crops. Increase of home-grown feed and food reduced cash outgo and the sale of surplus seeds increased income.

5. Finally, additional needs in the research program were listed.

In the brief discussion of the subject, the following points were made:

1. It is difficult to determine the influence of the TVA cooperative program apart from the influences of the State Experiment Station and Extension Service, as well as those of AAA, FSA, SCS, etc.

2. Very different results from two counties /the only major difference was the cooperative test-demonstration program in one, were cited by Mr. Reaves.

3. The payment incentive is a strong factor and greatly influences the acceptance of the improved conservation practices. Variation in ability of county agents and assistants also accounts for different results in different counties.

4. The Alabama results showed that the 13 Valley counties having the intensive test-demonstration program earned a relatively much larger proportion of the AAA conservation-unit payments than did the 54 counties outside the Valley area. It is possible also to compare the achievements of the test-demonstration farmer with those of his non-demonstration neighbors.

5. Economic factors influence farm income. Price variations make income relative rather than actual. The production problems may be solved without solving the economic problems. In general, the land, labor, and livestock are employed effectively during too small a part of the year.

6. USE OF COMMERCIALLY-DONATED POTASH ON TEST-DEMONSTRATION FARMS

The question of whether the use of potash donated by commercial agencies should be permitted on the test-demonstration farms was discussed at some length. A few members favored such procedure and felt that no complications would result. Most members were opposed to such use of commercial gifts and felt that there might easily be some embarrassing complications. Some States were vigorously opposed to accepting gifts where any conditions whatever were attached or implied, or might later be presented.

It was recognized that potash and other fertilizer elements would be needed in test-demonstrations on many soils, but it was agreed that these materials should be obtained by the farmer through the regular channels. Without formal motion, it was agreed that it was preferable to use, on the test-demonstration farms, potash materials that may be secured from public agencies.

Adjourned at 12:20 P.M. to reconvene at 1:15 P.M.

AFTERNOON SESSION, WEDNESDAY, MARCH 5

7. SUGGESTED MEETINGS OF SUBJECT-MATTER SPECIALISTS

The question as proposed was: "Should representatives of the Station and Extension subject-matter specialists (agronomy, animal husbandry, chemistry, agricultural engineering, farm management, home economics, test-demonstration supervisors, etc.) concerned with the planning, conducting, and evaluating of the test-demonstration program, hold conferences at regular intervals, or on call, to prepare reports and recommendations for the guidance of their institutions and the Authority?"

By agreement of the conference, this question was passed over in order to permit discussion of other problems.

8. EFFECT OF THE NATIONAL DEFENSE PROGRAM ON THE VALLEY-STATES COOPERATIVE PROGRAM

It was pointed out that the Council of National Defense takes the position that the agricultural conservation program is helpful to national defense. This includes the TVA program of phosphate experimentation and test-demonstration. Budgetary items are the same as for the current fiscal year and no change in appropriations for these purposes is anticipated.

Nitrogen Production

In regard to the projected activities in nitrogen production, it was stated that when the present national emergency arose, the Authority made a study to determine the proper adaptation of Nitrate Plant No. 2 to the production of nitrogenous materials which would best serve the needs of the Nation's defense. As a result of these studies, the War Department arranged to transfer funds to the Authority to cover the expense of constructing a new synthetic-ammonia plant and for the rehabilitation and modernization of the ammonium-nitrate plant at Wilson Dam, both to be operated by the Authority. Work on these projects now is under way and it is hoped that production of ammonium nitrate will begin during the latter part of this calendar year. Production capacity of ammonium nitrate will be based on the anticipated production of about 150 tons of ammonia per day.

So long as the present emergency exists, all nitrogenous materials produced will be subject to requisition by the War Department. Accordingly, as present indications are that the Authority's facilities will be used currently to supply ammonium nitrate to the Nation's **armed forces**, production of nitrogen fertilizers for agricultural use is not presently feasible. However, when the War Department no longer requires the production from these facilities, they will be available to produce improved nitrogen fertilizers of the kinds that may be of permanent benefit to the Nation's agriculture. It is hoped to produce forms of fertilizer which will be suitable to supplement the present program of using phosphates under legumes to increase the soil's supply of nitrogen and organic matter.

It is contemplated that any nitrogenous fertilizers which may be produced at Muscle Shoals shall be utilized in a Nation-wide program of test-demonstration in which nitrogen fertilizers will be used on those parts of the farm which are adapted to short-term rotation and intensive cultivation. Nitrogen fertilizers used in this manner should aid in increasing farm income and in providing more of the requisites of family living. It also will relieve farmers of the necessity of plowing up steep slopes and other erosive lands which have been phosphated and now are growing phosphated legumes and grasses.

9. IMPROVING THE COOPERATIVE FORESTRY PROGRAM IN THE VALLEY AREA

Mr. McAmis invited consideration of the more effective utilization of water which falls on the farm lands in the Tennessee Valley. He mentioned the interest of the Tennessee Valley Authority in this matter not only as it relates to flood control, navigation, and power, but also as it relates to more efficient management of the soil and to plant and animal production. He asked the question as to how far the interest of the land-grant college extends into the question of water utilization from the standpoint of research, training, and extension.

In this connection, he pointed out that the primary use of water is for the production of useful plants and animals, the greater part of which are being produced on farm lands in the Valley, comprising about 18 million of the total 26 million acres. About one-third of this land is now being used for farm crops, about one-third for pasture, and about one-third for farm woodlands. Is it correct to assume that the matter of more effective utilization of water on these lands falls within the sphere of the research, teaching, and extension functions of the land-grant colleges?

There are some 8 million acres of nonfarm land in the Tennessee Valley. Most of this is in the hands of private owners and public agencies. What is the extent of the interest of the land-grant colleges in the utilization of water on privately owned nonfarm lands?

Assuming that this matter falls within the scope of authorization of the land-grant colleges, what additional research, if any, might be required? What additions to the training courses would be advisable to equip personnel to aid farmers and landowners to institute farm practices, including forest-land management, so as to improve the utilization and conservation of water? How far are the investigations which have been made on agricultural practices adaptable for application to nonfarm lands? Could public funds be invested more profitable in further investigation rather than in the application of known practices of use and management of the land? What is the interest of farm people, individually or by communities, in the fluctuations of flow in the streams, and to what extent can this interest be satisfied by the mere adoption of improved methods of management and utilization of farm lands? In other words, is it sufficient to acquaint farm people with the best-known methods of water utilization on the land through improved vegetative cover and other methods, or should they, in addition, be given some assistance in making determinations of the effectiveness of improved methods in utilization of water on their farms in leveling out the fluctuations in the streams which flow through their farms or the neighborhoods in which they live. Assuming that farm people need to know this, would it be helpful if TVA engineers could assist the agricultural experiment stations and, through them, the farm people to gather such evidence?

In the discussion which followed, Director Brehm called attention to the report of a previous Committee on Valley-States Forestry Development, of which he had been chairman (Minutes of Tenth Conference, pp. 4 and 5 and appendix B, April 25, 1938), stating that this report, with its recommendations that TVA assign personnel to promote forestry in the farm program, had been adopted by the conference but that no action has resulted. Mr. McAmis explained that the procedure was approved by the TVA Board and budget recommendations made for funds to go part way in the program but that these recommendations were not approved by the Bureau of the Budget.

Dr. Jardine, of the Office of Experiment Stations, stated that there are several successive steps and factors in any consideration of farm forests. The first is a decision as to proper land use; the second is proper forest management; and the third is the question of forest economics. Under the Flood-Control Act, certain funds were transferred from the Army Engineer Corps for a cooperative program of watershed surveys by the Department of Agriculture and the Army engineers. It has been difficult for the many agencies to get sufficient data on the larger areas. Much information can be had from the Weather Bureau, the Forest Service, and other agencies. This should be obtained before any further research is planned. Farm-forestry research belongs in the co-operative Federal-State set-up and should be closely coordinated with agricultural research. In the Department of Agriculture set-up, farm forestry has been separated from the Forest Service and placed in the Soil Conservation Service.

Dr. Baver referred to studies being made at Waco, Tex., and by the Ohio Experiment Station, in cooperation with the Forest Service and Soil Conservation Service, but pointed out that studies made in one area, under one set of conditions, would not necessarily be applicable elsewhere, under different conditions. Mention was made also of work done in Alabama and North Carolina, but it was admitted that it was not sufficient to answer present questions.

Director White suggested that, from the standpoint of economics, we must consider how the farmer can support himself while waiting 50 years for his farm forest to become productive. A grass crop can be grown in one year and 50 crops in 50 years.

MOVED by Director Davis, and seconded by Dean Schaub, that a committee of three directors of research be appointed to study the problems of farm forestry and to report their recommendations at the next Valley-States Conference. CARRIED.

The Chairman appointed Director A. W. Drinkard, Jr., of Virginia, Director H. P. Stuckey of Georgia, and Director Clarence Dorman of Mississippi.

On suggestion by Dean Cooper that the committee might need some funds in connection with their inquiry, it was agreed that TVA would provide for necessary expenses.

On motion, the Conference adjourned.

Respectfully submitted,

Carleton R. Ball,
Executive Secretary

APPENDIX A

VALLEY STATES CONFERENCES

of

LAND-GRANT COLLEGE DEANS AND DIRECTORS,
TENNESSEE VALLEY AUTHORITY OFFICIALS, and
U. S. DEPARTMENT OF AGRICULTURE REPRESENTATIVES

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<u>No.</u>	<u>Date</u>	<u>Place</u>	<u>Minutes</u>
1.	1933		
2.	1933, October 7	Knoxville, Tennessee.	Typed, 1 p. Funchess letter, 1 p.
3.	1934, July 6-7	Chattanooga, Tennessee.	Typed, 5 pp.
4.	1934, October 27	Muscle Shoals, Alabama.	Mimeographed, 13 pp.
5.	1935, December 12	Chattanooga, Tennessee.	Typed, 15 pp.
6.	1936, June 26-27	Chattanooga, Tennessee.	Mimeographed, 20 pp.
7.	1937, February 6	Knoxville, Tennessee.	Typed, 5 pp.
8.	1937, July 10	Knoxville, Tennessee.	Typed, 10 pp.
9.	1937, November 3	Knoxville, Tennessee.	Typed, 5 pp.
10.	1938, April 25	Knoxville, Tennessee.	Typed, 12 pp.
11.	1938, October 4	Atlanta, Georgia.	Typed, 10 pp.
12.	1939, April 4	Birmingham, Alabama.	Typed, 9 pp.
13.	1939, October 2	Chattanooga, Tennessee.	Typed, 9 pp.
14.	1940, April 2	Knoxville, Tennessee.	Mimeographed, 18 pp.
15.	1940, October 1	Asheville, North Carolina.	Typed, 9 pp.
16.	1941, March 4-5	Florence, Alabama.	Mimeographed, 32 pp.

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